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Edited by WILLIAM HUNTING, F.R.C.V.S.

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THE REMOUNT SCANDALS.

The fact that every man thinks he knows all about horses, and the additional fact that politicians never lose a chance of blackening and blaming their opponents probably account for the great amount of the excitement shown by the daily press lately. Why the word "scandals" should always be used is hard to explain. Incapacity and ignorance may have been shown, but these faults are hardly expressed with precision by the word scandal. It is not easy to write an exciting leader on mere want of knowledge, but if it can be suggested that some one is a scoundrel and ought to be made an example of, then readers can be worked up to a high pitch of indignation. We have carefully read the report of the Committee on the Hungarian horse purchases and have failed to find very much wrong.

Naturally the weakest man is selected for a scape goat. The veterinary officers are the smallest men concerned, and so the papers have followed the Government in abusing Mr. Hartigan. This gentleman was once an Army Veterinary Surgeon. During his active service he was acknowledged as a first class judge of horses. He was perhaps the finest steeplechase rider of his time when in the Army. His name does not appear on our Register now because years ago he retired. Having no Army office he made a business arrangement with Mr. Lewison that if he obtained for him a contract he should have a percentage on the total amount paid. This is simply honest business, and no one has a right to complain. Mr. Hartigan went out to Hungary to assist his principal in selecting horses. No one was more competent.

It has been said that the Hungarian horses selected were cheap rubbish, but that is only one side of the story, and the best men are unanimous that the horses were in size, make and soundness all that was required. They did not turn out well because they were shipped in poor condition, and on landing rushed into work before fit for it. After Mr. Hartigan had finished his work for Lewison, the contractor, he was the only English veterinary surgeon left in Hungary. The Remount Officer purchasing for the Imperial Yeomanry, desiring to save time and knowing Mr. Hartigan's capability, employed him to examine the horses being delivered. No one has said that the examination was not honest and thorough, but Mr. Hartigan did not disclose the fact that he had a commission on the sales. This is his only fault, and we agree with Lord Roseberry that he has been badly used and shamefully slandered. Not one shred of evidence has been brought forward to justify the reflections made in the press upon Mr. Hartigan.

The veterinary profession has done good work for the Army in South Africa, and it is unjust that it should be besmirched as it has been. Not one specific accusation has been made against it worth a second thought save that referred to by Mr. Brodrick, in which an officer declined to take steps to establish his character but preferred resignation and the forfeiture of his £800 gratuity. This does not look nice, but Mr. Hartigan has, we consider, been shamefully misrepresented and abused.

RUSH SHIPPEN HUIDEKOPER

PHYSICIAN, SURGEON, VETERINARIAN, EDITOR, TEACHER, AUTHOR, ETC.

The following notice of a distinguished American veterinarian is abstracted from an article in *The Journal of Comparative Medicine* above the signature of Dr. Leonard Pearson, Dean of the Veterinary Department of the University of Pennsylvania, U.S.A.:

Born at Meadville, Pa., May 3, 1854, the son of Edgar Huidekoper, a well-known writer on theological subjects, and Frances Shippen, the daughter of Judge Henry Shippen. His grandfather was Harm Jan Huidekoper, the founder of the Meadville Theological Seminary.

Died at Philadelphia, Pa., Dec. 17, 1901. Age 47 years.

Dr. Huidekoper's death occurred at the Presbyterian Hospital, where he was taken for an operation to relieve a condition arising incident to an attack of pleurisy. Pneumonia followed the operation, from which he succumbed on the morning of the 17th of December, after an illness of ten weeks.

Several years of his life were spent as a surgeon in active practice and in teaching, and upon the staff of the Children's Hospital, Philadelphia Dispensary, and University Hospital, and for two years he served as Coroner's physician of the City of Philadelphia.

In completing his education abroad he devoted many months in the laboratories of Virchow, Koch, Chauveau, and Pasteur.

After spending several years abroad he returned in 1883 to undertake the work of founding a veterinary department of the University of Pennsylvania, with which department he remained until 1889, when he removed to New York, and for a time was among the corps of professors of the American Veterinary College, after which he accepted the Professorship of Anatomy and Surgery in the New York College of Veterinary Surgeons, and remained with that institution until the amalgamation of the two schools.

Dr. Huidekoper was an Honorary member of the Pennsylvania and Keystone Veterinary Medical Associations, member of the American Veterinary Medical Association, New York State Veterinary Medical Association, New York County Veterinary Medical Association, and a number of other medical and veterinary organisations, a member of the Philadelphia Club for many years, Rose Tree Hunt, Army and Navy Club of New York City, and many other social bodies and organisations for the development of true sport.

After a few years in general practice and in patho-

logical investigation as Coroner's physician of Philadelphia, he was asked to go abroad to prepare himself to organise the teaching in the Veterinary School about to be established by the University of Pennsylvania. This he did in 1881, and returned in 1883 after having graduated from the National Veterinary School at Alfort, France, and after studying in Berlin and having visited most of the important veterinary schools in Europe.

Under his supervision the Veterinary School was built and the courses arranged. The course of instruction laid down by Dr. Huidekoper followed, as far as was possible within a three-year curriculum, the plan of instruction at Alfort, with such modifications as were made necessary by the means at his disposal and by special American conditions.

One leading idea was that the students should not only hear and see, but that they should *do*; that they should learn the handiwork of their profession as well as its principles. With this thought in mind, clinical instruction, operative surgery, and practical farriery were developed to a point before unapproached in America Much laboratory work and dissecting were required, and the students were quizzed and reviewed as well as lectured to.

It is now most interesting to note that at this time the great schools of medicine are rapidly coming to the practical plan of instruction laid down by Dr. Huidekoper for his veterinary students seventeen years ago.

Dr. Huidekoper was a man of great versatility, of prodigious memory, and marvellous capacity for continuous effort. All of these were important factors in his work as a teacher.

During the first years of the school he taught anatomy, histology, the theory and practice of veterinary medicine, zootechnics, and held clinics. Besides all of this he conducted a very large practice and edited this *Journal*. Few men could have done one-half of the work that Dr. Huidekoper seemed to carry buoyantly.

Until the organisation of the school was complete, two years after it opened, and the teaching was apportioned among an adequate corps of professors and instructors, Dr. Huidekoper worked habitually until after midnight; and was usually up at six o'clock in the morning, ready for an ice-water bath and another day of unremitting labor.

Dr. Huidekoper's lectures were marked less by brilliancy of delivery or beauty of diction than by lucidity, by methodical arrangement of matter, and by precision of statement. He spoke rapidly, but clearly, from copious notes, and always left in his hearers' minds a clear picture of the conditions described. His method was positive rather than argumentative, because he believed it was better for students to have presented to them the demonstrated facts and his deductions from them than the various conflicting views of the authorities. But in the greater controversial questions he was careful to state both sides.

By extensive reading he kept himself informed of all important work along veterinary lines, and always gave his classes the advantage of the most advanced teachings. His work was always "up to date."

Dr. Huidekoper was always ready to explain difficult or obscure points in his lectures, and was ready to give to his students as much time outside of the class room as they needed or as his other numerous engagements would allow; but for a lazy or inattentive student he had no patience; for these so sharp were his questions and so biting his comments that they soon found his clinics and class-room most uncomfortable.

There is not one of Dr. Huidekoper's students who does not now have a sense of deep gratitude towards him, and who does not now feel a deep sense of personal loss and of profound sorrow.

THE DIAGNOSIS OF LAMENESS.

Some men are supposed to be specially gifted with reference to the diagnosis of lameness; at any rate they are able to make the public believe so, which, for themselves, is the important matter. There is no element of doubt in their diagnosis. The opinion is given in a dogmatic munner, and if the case goes sound they naturally get the credit of bringing about such a fortunate termination.

It would be a difficult point to decide how many correct opinions are given in cases of lameness that ultimately become sound. We may flatter ourselves, in the event of a successful termination, that our diagnosis was correct, but in reality the seat of lameness may have been in a different location, and rest may have brought about a return to soundness. The *cause* of many cases of lameness is apparent enough, but it is the cases presenting no appreciable alteration of structure that give rise to difficulty of diagnosis and differences of opinion.

Take for example those obscure cases of lameness which we attribute to some affection of the foot. The lameness may be intermittent and more acute at some periods than at others. The feet may appear of the best description, the horse may point the foot, and there may be heat around the coronet, and he may improve with exercise. At one time we would diagnose such cases as navicular disease. But we learned by experience that some of these cases recover, and work sound for years—especially if under our advice the horses were sold into other hands. We do not believe that anyone, no matter how gifted, can give a positive opinion in such cases as to the exact nature of the affection, or to the probable results.

We hear many methods recommended as aids to the diagnosis of lameness, such as paying attention to peculiarities of action, to the history of the case, and to manipulation of the affected limb. Whatever we may gain from the first and second of these, we have very little faith in the last, viz., manipulation. Of course in the examination of the foot, the knife and pincers must be thoroughly used, but we are principally referring to obscure cases of lameness. Many horses will yield and show uneasiness if any portion of the limb be manipulated, this is especially so in the case of nervous animals. So we do not believe in drawing the fore limb backwards and for-

wards and pressing the muscles of the shoulder, as of any value in the diagnosis of shoulder lameness.

The condition known as "dropped elbow" may be a symptom of a variety of conditions, such as fracture of the ulna, fracture of the first rib, paralysis of the radial nerve, injury to the triceps muscle; and we have seen two cases presenting this symptom the cause of which was proved to be a ringbone that was forming. Needless to say we were utterly wrong in the diagnosis, and when the exostosis commenced to appear, we had to make some excuse for the error.

Neurectomy is a very favourite method of avoiding the effects of an erroneous opinion, or the confession of ignorance. We rememoer once seeing a case in which the low operation of neurectomy had been performed, and a splint puncture-fired on the same leg. This is of course a partial confession of ignorance of the seat of the lameness, but no doubt a plausible excuse was offered for the double operation. No doubt there are cases in which it is difficult to decide whether a splint or some obscure affection of the foot is the cause of the lameness, and a considerable amount of tact is necessary in dealing with an inquisitive client on the matter. From a commercial point of view skill is nowhere unless combined with tact. With the majority of clients the less time taken in arriving at a diagnosis and the more dogmatic the opinion the more likely is the practitioner to inspire confidence—of course he must be able to "get out of a hole" in the event of his opinion proving incorrect.

We do not admire or recommend such methods of diagnosis, but as individuals we have to pander somewhat to the ideas of clients. If we practised for pleasure no doubt we should act in a very different manner. Everyone having contracts with large stables must have been struck with the large number of cases of even severe lameness that recover with little or no treatment, the *vis medicatrix naturæ*, and rest, proving the cheapest and best agents in the process. We learn nothing with reference to diagnosis from such cases; in fact it is very difficult to obtain any addition to our knowledge of the subject from ordinary practice, as we are not permitted by circumstances to follow up the history of the large proportion of the cases we treat, and make post-mortem examination of doubtful and obscure cases. The commercial element enters very strongly into the matter as we do not find owners of horses willing to have them destroyed except they are perfectly useless for any work.

With reference to errors and ignorance of our subject we flatter ourselves that we are not worse off in this respect than the members of the sister profession. If we read the medical journals we find from time to time confessions of errors in diagnosis, and also of the lack of full knowledge of many subjects. The man who states that he never makes mistakes resembles one who boasts that he never told a lie. The former is usually an individual who is so infiltrated with his supposed skill that he is blind to his defects or imagines he forgets them. The latter is probably a confirmed disciple of Ananias.

Few indeed will be bold enough to assert that they have never been mistaken in the diagnosis of foot lameness, or after giving an opinion that the seat of lameness was in some portion of the limb, they never found evidences of pus breaking out at the heel or coronet shortly afterwards. In spite of every skill and attention such things will occur; of course the fact of making such mistakes once leads us to be more careful on future occasions.

In consultations, differences of opinion usually occur as to the seat of lameness. The consultant as a rule gets the credit of being correct, while in reality the usual attendants' opinion may have been the right one. For instance the attending practitioner may diagnose the case as one of shoulder lameness, the consultant may assert that the fetlock is the seat of the lameness, and proceed to apply a plaster bandage thereto. At any rate the horse becomes sound, and wherever the real lesion existed, rest has brought about a cure and the consultant gets the credit, while the attending practitioner is regarded as ignorant In the same way if in a doubtful case the low operation of neurectomy be performed and the horse happens to go sound, the operator gets the credit. If the operation had *not* been performed, the animal might still have become sound, as it may have been one of those cases of foot lameness that recover without any treatment.

E. Wallis Hoare.

"TREMBLING" IN A HEIFER.

Mr. Pollock's case has called to my mind one which I attended in 1894.

Subject.—Crossbred shorthorn heifer, 3 years, in calf. Had been noticed to have a peculiar gait for many months and was supposed to be shortsighted, if not blind, otherwise seemed in good health. but the difficulty in walking gradually increased and a shiver or trembling became noticeable, affecting the hind limbs principally, and especially apparent if the animal were excited, simulating clonus, and gradually becoming acute so that a startling noise such as the flapping of a mackintosh would cause the animal to fall and remain prostrate for some minutes unconscious. This was the state of affairs when I was called in. I found a weak heart action with a full congested pulse and normal temperature, blindness, and the aptness to fall on hearing a sudden noise, which occurred once under the following circumstances: I and a friend were shooting in a field adjoining the one in which she was, he was unaware of her peculiarity and fired at a rabbit whereupon she dropped, and he exclaimed in horror, "I've shot K's cow," to which I replied "I believe you have, let's see," and when we got up to her she was apparently dead, so to improve the occasion I suggested he had better hurry up to the house and tell the owner, which he set off to do. Meanwhile, under my observation the cow got up, and the farmer, espying the game, kept it up and rated my friend well, so that her reanimation produced the same result as the re-

* P. 424, January 11, 1902.

turn of the prodigal, and the night was spent in feasting and making merry.

Some weeks after this the disease made rapid progress and I advised slaughter, which I carried out by shooting her in the heart to avoid damaging the brain, having on my first visit described the condition I expected to find to the owner, who was getting quite excited at the verifications of my prognosis which had from time to time occurred, and was anxious to see the little pearls I had told him would be found in the brain; he saw one of the most perfect specimens of *perlsucht* I have ever set eyes on, but looked on me as a sort of fraud when he found they were not marketable gems.

No doubt ere this Mr. Pollock's case will have become meat, and if the pole-axe has not spoilt the brain the post-mortem appearances of that organ would be a useful sequel to his interesting notes.

THE DOCTOR SAHIB.

ABSTRACTS FROM FOREIGN JOURNALS.

INFECTIOUS PNEUMONIA OF CALVES.—By H. MARDER, of Glowitz, District Veterinary Surgeon.

Reference has recently been made to septic pneumonia in calves in the *Berliner Thierarzt Wochenschrift*. Permit me these few observations.

Inflammation of the lungs in calves in which also the pleura is often attacked has been repeatedly encountered by me as an infectious disease among stock in East Prussia and Pomerania.

The disease occurs as often in summer as winter. In many cases it could be ascertained that the illness had prevailed among the stock in preceding years and that the cases of death had been ascribed to paralysis, scour and navel ill.

Treatment by fomentations and sinapisms were always ineffective. The illness invariably ended sooner or later in death. The appearances of the illness are well described by Dieckerhoff in his "Special Pathology and Therapy, 1892," 2nd vol., part 1, under "Infectious Inflammation of the Lungs in Calves."

Post-mortem examination always gave the same chief appearances. The parts attacked being dark reddish brown, firm and hard, and sharply defined from the neighbouring pale red healthy lung. In my experience only the anterior lobes of the lung were attacked, but the process had so advanced from this point that only small portions of the posterior part of the lungs were unaffected. I have seen the illness in calves running together in large herds, as also in those confined singly in wooden partitions.

This illness has nothing to do with navel ill and scour. The appearance of the affected portion of lung is often similar to the appearance seen in the lungs of swine suffering from swine fever.

Treatment. — Separation of the healthy from diseased and suspected animals. Pulling down of the wooden rails or partitions and using the same for fire wood. In case of wooden floors these should be removed and burnt, and the earth underneath shovelled away and the fresh ground surface strewn with chloride of lime. Fresh gravel should be put down over this. The droppings may be rendered harmless by chloride of lime. After this the walls and any old portions of the dwelling place should be well cleansed and disinfected. After thorough ventilation of the place the healthy animals may again be brought in, whilst the sick ones may be slaughtered or die after useless treatment. By these measures the disease can always be brought to an end. Renewed disinfection of the stalls at certain periods is always advisable.—(Ex. *Berliner Thierärzt Wochenschrift.*)

[The remarks of "The Doctor Sahib" under this head in your issue of February 15th are interesting and instructive. They show how a man can turn his misfortunes to pecuniary profit. They also show that it isn't wise to accept another man's opinion, however great a friend he may be, without examining for oneself. It is wise not to start with intra-tracheal injections till we are certain of the presence of *Strongylus micrurus*. The nature of the season and pasture land, the general condition of the calves, the staring appearance of the eyes when they cough, the expulsion of stringy mucus, in which the parasite may sometimes be detected, all help us. Previous history and a post-mortem will also help us. Personally an intra-tracheal injection of (℞ Ol. tereb. ʒi. ʒii., acid carb. chloroform, glycerine *aa.* ʒss.) combined with careful housing and good liberal feeding and tonic medicine have produced good results both in calves and older animals.

The opinion of the expert that the septic condition noticed in "The Doctor Sahib's" cases was probably due to accidental inoculation with the needle is one of those things no fellow can understand, especially if there was no septicity at the point of injection.]

G. M.

VETERINARY SOCIETIES.

IRISH CENTRAL VETERINARY ASSOCIATION.

(Concluded from p. 512).

DISCUSSION.

The PRESIDENT (Mr. W. A. Byrne, Roscommon) expressed the indebtedness of the members of the Association to Mr. Watson for his very able and interesting paper. Notwithstanding his 32 years residence in this water-logged, snow-swept, rain-beclouded kingdom, he thought Mr. Watson to-day was the strongest evidence that it had not exercised a deleterious effect.

The subject treated of was of exceptional interest, but as his experience of the disease in question was identical, except in the matter of duration, with that of Mr. Watson, he could scarcely be expected to say anything new about it. In 1879 he saw a hundred sheep in one field dead of "liver-rot," and since he commenced to practice in Roscommon the greatest scourge he found was this liver fluke. He thought if any members of the Association interested in this disease were to go down to Roscommon next day he could bring them round to sundry cocks of hay and show them many an abject, woe-begone

little animal staggering up against a hay cock and trying to prolong a miserable existence. The most interesting point in connection with the subject treated of was its medico-legal aspect—in determining the length of time that an animal had the disease, that is how long was it since it had become affected. That of course was a question to be left to the experience of the practitioner, there was no other reliable guide. One of the most striking post-mortem appearances of the diseased livers was the shell-like cutting in the liver ducts which Mr. Watson so graphically described. He never in cases of "big gall"—as his country people call them—had been able to find the bad effects, which the essayist had indicated, from very small doses of Epsom salts in the early stages. He knew that there were cases of death from the indiscriminate use of large doses of salts, but very small doses given to an animal about to become affected produced beneficial results. What he used himself was nitro-hydrochloric acid with an infusion of Calumba; he kept it in large quantities and ladled it out as the people wanted it.

He thought the conclusion of Mr. Watson's paper pointed a wise moral—that the County Councils of the Kingdom should appoint Live Stock Committees to act under their control. The advantages to be reaped by the formation of such committees would be very great as they would place before the people the best measures to be adopted for the prevention of disease and its treatment, and give them an intelligent appreciation of the conditions under which their stock live. He was of opinion that the various County Councils should have brought home to them the obvious advantages within their reach, and the suicidal folly of neglecting them.

He hoped that Mr. Watson for his very able and interesting paper would be rewarded with a good, vigorous, and informative discussion. He had only again to thank him for his efforts. He was an old member of the profession and one long established in his (Mr. Byrne's) county before he commenced practice and he thanked him for setting an example of neighbourly kindness and generosity to him as a young practitioner which he would be very pleased and proud to know was universally adopted all over Ireland.

Mr. McKenny (Dublin) was of opinion—taking into consideration the life history of the parasite causing the disease distomatosis—that as a preventive measure, when animals are noticed to be affected they should be placed on rather high land, and for this reason, that as far as was known the particular snails referred to were found in the neighbourhood of water, in low-lying damp places, and they did not exist on high lands. Accordingly when affected animals are removed to high ground the ova when passed cannot be generated again.

Then again there were animals that were absolutely beyond treatment. Such were only a nuisance and should, for the public good, be destroyed. With reference to salting the lands and other means like that, he believed such to be a common practice, but he himself thought when animals had reached a certain stage they should be slaughtered. Of course that would involve the expenditure of a great deal of money, but ultimately he could not see why in that particular fashion the parasite would not be destroyed altogether. Taking its life history into consideration, how could it continue to exist if the cattle were not there? If they are moved from the snail its reproduction must cease. Of course the wholesale slaughter of all infected cattle would be something terrific, but slaughter need only be carried out in cases wherein it was determined that it would be hopeless to attempt a cure.

Mr. Howard (Ennis) wished to add his *quota* to the thanks to Mr. Watson for the trouble he had taken with that important subject. To his mind he never looked on it as worth the bother to try to cure an animal that he was sure was suffering from "fluke," because he believed it would not repay them for the trouble that would have to be taken. Whenever he was sure that a client of his had a portion of this land infested with fluke, if he was at all a man that could afford it he endeavoured to make him take preventive measures, and he was happy to think that in the case of one very large farm in County Clare at the present time the results had been very favourable. A gentleman farming a very large tract of land was losing a lot of calves (yearlings) and sheep. He advised him to have the land salted in portions, and he continued his work for close on three years altogether, and he is now very much better off. Though it cost him a lot of money it was nothing to the loss he had previously. He thought treatment was of very little avail. He believed it was a matter to be urged on the County Councils and the Department of Agriculture to take some steps to remedy the evil, and perhaps they could do more in that particular direction to assist all classes than in many other directions in which they were acting throughout the country.

He would like to ask Mr. Watson what is the longest time in his experience that he believed a cow or a bullock would live after the fluke had gained access to the system? He had a particular reason for wishing to know what Mr. Watson's idea on that particular point would be.

Mr. Wade was much obliged for the paper, which he found very interesting. He happened to have some cases this year, very obscure cases, and curiously enough they came from England. They presented the appearances described by Mr. Watson, including scour and emaciation, and in fact he could not get under the disease. He made a post-mortem examination, and could bear out the reader's statements exactly as he mentioned them. The liver showed that shelly appearance in the ducts, but the organ seemed to him to be rather contracted than enlarged. Of course he had not the slightest idea that it was a case of "fluke," because he had not met any cases in his part of the country. He found also that the small bowel showed very diffuse inflammation all along the whole of the tract, and the end of the large bowel was quite contracted. He was led to believe that it was a case where the animal got bad water during the summer. However, the man claimed compensation, as the vendor had engaged the animals to be sound. He was indemnified for a couple of the beasts, and he turned the rest out on new pasture. Although some of them exhibited similar symptoms the rest went on and recovered.

He understood that there were great ravages from flukes some 25 or 30 years ago, and principally among sheep. It was alleged that the sheep in the earlier stages of the disease would improve rapidly and then become very emaciated afterwards and gradually pine away and die, so that the method the farmers round his part of the country adopted was that instead of overstocking the land with sheep every year they took a meadow here and there, and that had the effect of stamping out the disease completely. They never had any cases of "fluke" in his district now—at least he did not meet them. He was much obliged for the valuable paper which enlightened him to a considerable degree.

Mr. Hedley said that at the time Professor Thomas made his communication to the Royal Agricultural Society of England he was engaged himself with some microscopical examinations relative to fluke, and was much interested. He entered into correspondence with him, and they exchanged some slides on the subject. He remembered that in one of his letters he mentioned that while he referred to the *limnaea truncatula* as being the snail which was most prevalent in the district where he had made the investigations, he did not wish it to be understood that that was the only snail that would become infected during the period of fluke invasion. That almost any soft-bodied snail would admit of puncture and act as an intermediary host. Unfortunately he lost

touch with Prof. Thomas, as he went to New Zealand or Australia, and their correspondence ceased. It was, however, during that time that he (Mr. Hedley) had the honour of directing the attention of the veterinary profession in the United Kingdom to the fact that "liver fluke," as it was commonly called, did not always affect the liver only, as he had found during his investigations a very large number of lungs which were affected with fluke. In such cases the conditions were very much the same as with the older livers. The lungs became encapsuled with a hard, calcareous sort of shell, the longer the time the flukes had been there the harder seemed to be the shell. Sometimes they commenced in size from that of an ordinary hazel nut until they would reach that of an average man's hand. This when cut into was found to consist of quite a number of *loculi*, and in the centre of these you would find the *débris* of some fluke or flukes either in the form of ova, or there would be a quantity of peculiar coffee-coloured material very much like bile. How this bile-like material came to be in the *loculi* was more than he could well understand, but it was his opinion that it was on the bile that the fluke lived; that it was on the bile its existence very largely depended; and he believed that when the blood stream passed through the lungs it was there that the fluke obtained its supply of bile, after absorbing it from the blood which had gone forward to be oxygenated in the ordinary course of the physiological changes which took place in the lungs.

Passing on from that point he would like to mention that not long before his attention was directed to a bull which was said to be suffering from "ringworm." On making an examination of the animal he found that there was no ringworm as they understood it, but there was that spurious condition where the hair had been denuded in circular patches very largely about the quarters and across the upper part of the lumbar region, and then it gradually tapered off almost wedge-like in shape to the point of the shoulders. There was no denudation about the ribs or the lower extremities. He suggested to the owner that he had perhaps better give the animal an oleaginous purge, and wash the body with a solution of Jeyes' Fluid. This was done, and he heard nothing more of the case for some three weeks; but being on the premises again he was asked to look at it. He never was more astonished than at the shrinkage that had taken place: the animal had gone to a skeleton; it was greatly hide-bound, covered with scales as though it had never been cleaned or treated in any way; and it had the appearance of having been subjected to the coarsest and worst weather it could possibly have. It was suggested that it might be a case of Tubercle. He made an examination but did not think so. The owner desired that it should be tested with tuberculin, and there was no response to the test. They then put it under treatment—keeping the bowels open and supplying salt with a little linseed (referred to by Mr. Watson). The bull began to improve. Within a week the tightened skin was beginning to give to the hand. In a fortnight it had put on 20 lbs. weight. In three weeks they could take a good hold of the skin. The scaly condition had passed away, and they were looking forward to a good recovery. But one day he received a message that the bull was very bad with a large swelling on his face, and they would be obliged if he would see him. He could not go himself so sent a substitute. It was found that there was a huge swelling on the right side of the face, and he was to all intents and purposes lock-jawed—could not open his mouth, could not take any food, the food was horned, and he saw the bull afterwards and with difficulty got his mouth open; made an examination of his teeth and found them all right. Nothing was wrong with the gums, but on the internal lining of the mouth—on the buccal muscles—there was an opening. He got his finger in and broke down an abscess. It appeared that the animal had been struck a heavy blow, and the cheek had pressed on the teeth to such an extent that a very large abscess was formed. In the course of a few days the bull died. He could make nothing of the case—he was too far influenced by his previous ill-health to admit of recuperation. The post-mortem examination was extremely interesting. There were not more than a dozen flukes in the liver, and they were as well formed as if they had been there some time; and the passage of flukes was taking place into the bowels through the bile. The bile was found as so well described by Mr. Watson; it was orange-coloured, watery, and contained flocculent matter in it like levigated chalk. The liver was pale and comparatively easily broken down, and it was quite evident from the tapered condition of the gradation of colours—from an almost normal condition right away to a yellow stage—that one of two possibilities were revealed, either that the organ was gradually getting worse or gradually recovering. From the history of the case it must have been the latter, for if it had been getting worse the skin of the animal would not loosen nor would the fæces be normal. The increase of flesh was also favourable to the assumption that the liver was improving.

There was another matter he would like to bring under their notice, though he was sure it would be familiar to them also, and that was that in some large sheep-breeding districts where the sheep had progressed to a certain point they were put on to fluky lands and would become fluke-stricken. One of the first things that happenrd when an animal became affected with fluke was that it improved in condition.

Mr. HOWARD remembered that the late Professor Walley used to describe that as one of the prominent symptoms in dealing with sheep recently attacked by fluke. It was always noticed that the animals immediately improved after the access of the fluke to the liver.

Mr. HEDLEY said the practice was very common in certain districts. The owners wished to increase the value of the animals for slaughter, and it did not injure anybody. It was analogous to the case of a man wanting to sell a heifer; he got her impregnated to improve her condition much more rapidly owing to the change. In the other case the liver became stimulated owing to the presence of a parasite. He was very much obliged to Mr. Watson for bringing the paper forward, and joined with all in returning him sincere thanks.

Mr. WINTER said it was some years since he had seen a case of "fluke," and he attributed that to the fact that most of the land in his district had been well drained during the last generation, or half-generation. He believed with one of the previous speakers that it would be possible practically to kill the disease by grazing cattle on a meadow here and there and leaving them idle for a year or two. As to curing the disease once it got into the body of the animal he thought it was almost impracticable. The only thing was to immediately fatten the animal for slaughter, and affected animals fattened more quickly. He remembered seeing down in the Co. Meath a lot of three-year-old bullocks which had contracted the disease, and they left them there to die. It was a piece of great cruelty. It was just as well to kill the animals that got affected with the scourge, and not to keep them to be a source of infection to other sheep or cattle grazing on the land. He knew very little practically about the subject himself, but Mr. Watson's paper freshened up what he did know as a student. It would be well to spare the time to look up those matters, but in private practice it is hard to keep us one's reading. He thought Mr. Watson's paper one of the best they had in the Association for a long time.

Mr. VAHEY agreed with the reader of the paper in nearly all he had said about "fluke," and he saw a considerable amount of the disease in his district. With regard to the duration of the existence of the parasite in

the liver, he recalled Professor Walley's lecture in which it was stated that the bile duct was coated with calcareous matter when the fluke had been in existence 12 months. He had seen a number of calves with calcareous cysts in the lungs and they always contained the peculiar yellowish fluid.

With reference to prevention of the disease he did not agree with Mr. McKenny in his recommendation of wholesale slaughter of the affected cattle. He did not see the merit of killing the cattle and leaving the snails alive. He thought it would be better to properly drain the land and put plenty of lime and salt on it, and it would not cost nearly so much as the wholesale slaughter of cattle.

Mr. McKENNY explained that perhaps he had not expressed himself sufficiently clearly. He did not recommend wholesale slaughter of cattle; what he wished to say was that there were animals hopelessly ill with a disease which was incurable, and he believed that those animals were spreading the disease in that state, and that they ought to be destroyed.

Mr. VAHEY (continuing) said he could confirm the statement made by Mr. Hedley about putting sheep on to flukey land to fatten in a case when they are nearly fit for slaughter. There was a marvellous improvement in a very short space of time.

Mr. DAWSON said there was only one question he wished to ask Mr. Watson, and that was in connection with the legal side of the matter. When would he say that a liver affected with "fluke" was unsound and when a sound one? There must be some stage; surely he could not condemn a liver with half-a-dozen flukes in it?

Mr. WATSON thought that if there were fluke at all present it was a condition of disease; and if a person gave a warrant that there were no flukes it would be an injustice.

Mr. DAWSON mentioned that plenty of cattle died of other diseases, and if on post-mortem examination flukes were found to exist in the liver the veterinary surgeon giving the warrant would be held responsible.

Mr. WATSON replied that no general law could be laid down. The mere fact of a few flukes being present could not be the cause of death, and it would be shown that the animal had died from another cause. A beast could live a long time, and fatten even when affected with these parasites.

He was very pleased with the favourable reception given to his paper. Though it was an old subject he had thought it right to bring it before the Association. There were hardly any points in the criticism that required to be answered. Mr. McKenny's idea that pining cattle should be knocked on the head was a sensible one; they infected the land and only helped to carry on the disease. With regard to Mr. Howard's remarks, he had known cows suffer for years with liver disease. They might die very quickly, but as a rule they pine away (like Mr. Byrne's fluke-stricken victims), lie up against the haystacks, prolong a miserable existence, and pollute the land. A few points were brought to his mind by Mr. Hedley's observations. He had reminded them that flukes might exist in other organs besides the liver; he had himself on two occasions met with cases of that description. When in the lungs he found that they usually became encysted—and they might not do a great deal of harm. He thought these were only exceptional cases, as the *habitat* of the fluke was the liver.

He might mention that human beings were not exempt from fluke. People accustomed to eating watercress, for instance, might become affected through that medium, and they should be careful to have the cress thoroughly washed with salt and water. This would destroy those little cercariæ that adhere to the stems of the plants; watercress was quite a favourite with them, he believed.

He hoped his paper would not give a bad character to Irish cattle, but it was well known that a good many become troubled with scour, and, as Mr Howard said, it did not pay to treat them; but still when a client wished that an effort should be made to save his beast they should try to do something favourable for the animal. He made a good many powders for those scoury cattle, and if they did not do some good the people would not come for them as regularly as they did. If he turned them away or knocked their cattle on the head they would make disparaging references to the value of the profession.

He hoped in the course of their duties none of their members would contract this disease of the liver. He was reminded in this connection of a few lines of poetry he saw in an American paper out West—far West. They might not be a bad conclusion to the subject. They were pretty much as follows:–

"Grim Death has taken darling little Jerry,
The Son of Joseph and Selina Howells;
Seven days he wrestled with dysentery,
And so he perished of his little bowels.
Perhaps 'twas weaning injured little Jerry,
His bottle seemed to hurt his stomach tone;
But with the Angels he'll get plump and merry,
For there are no feeding bottles where he's gone.'

No doubt in the future there would also come a happy time for the veterinary practitioner when he would cease to be troubled with the *distoma hepaticum*.

Votes of thanks to the Essayist, President, and Secretary concluded the proceedings.

NORTH WALES VETERINARY MEDICAL ASSOCIATION.

"MILK FEVER."

By G. J. ROBERTS, Pwllheli.

Read at the meeting of the North Wales V.M.A. at Chester, September, 1901. The discussion to take place at the meeting at Rhyl on Tuesday, March 4th.

Mr. President and Gentlemen,—The subject which I have the honour of bringing before you is, without doubt, one of the most important diseases both for cow keepers and country practitioners.

Until recently it was considered extremely fatal, the percentage of recoveries in some parts of the country not being more than 20 per cent., hence the butcher was very often called in instead of the veterinary surgeon.

We know but little about its etiology or its pathology, yet we can safely say that during the last few years a line of treatment has been established which has proved far more successful than any other advocated previously.

History.—It is supposed to have been known since an early date, though not as early perhaps as some other diseases, as it is a disease brought about mainly if not entirely by domestication. It was only in the latter end of the eighteenth century that it was first described with any accuracy, and in 1807 Skellet devoted much time to the study of this disease and came to the conclusion that it was due to a *sympathetic reaction*. Since his time no disease has had so much attention in veterinary literature.

Definition.—It is an acute disease almost special to milching cows, characterised by loss of consciousness, paralysis, suppression of milk, and sometimes by convulsions (Fleming).

Synonyms.—Sleeping fever, brain fever, loin drop, the

fall, dropping after calving, calf fever, milk disease, puerperal fever, puerperal apoplexy, vitulary fever, etc.

Symptomatology.—The symptoms have been described in full so many times and are so well known to all present, that it is unnecessary to describe them minutely.

The disease usually sets in on the second or third day after calving, although it may occur in a few hours after parturition, and even prior to it. A cow may also be affected in seven or ten days after calving, and cases are on record as long as seven or even ten weeks.

Premonitory symptoms.—These are not characteristic of milk fever, but simply any deviation from health, such as loss of appetite or rumination, dullness, isolation if on grass, body temperature cold or changeable, disregard for calf. Sometimes diminished secretion of milk may be noticed before any of the other symptoms become apparent. When any or all these symptoms appear in a susceptible subject, that is soon after calving, in a cow that is considered a deep milker and in good condition, we are justified in suspecting milk fever.

Symptoms proper.—Soon, however, the symptoms proper become apparent. Much uneasiness, champing of the jaws and grinding of the teeth, stamping and knuckling of the hind feet and sometimes of the fore feet, whisking of the tail, hanging back in the stall, spasmodic twitchings and tremblings of the muscles of the quarters, anxious and wild expression of the animal which is very characteristic. Sometimes the head seems to be affected first, and then one of the most prominent symptoms is pushing the head against the walls and mangers, bellowing and moaning, in fact the animal may be raving mad in less than an hour after the first symptom was seen. In most cases brain symptoms are not very late in appearing. In other cases the spinal cord seems to be first attacked, and if these are forced to walk they stagger.

The hind quarters are usually affected worse than the fore ones, although sometimes the forelegs are weaker than the hind. The hocks are described as being straightened and seem to be unable to bear their weight. Straining is often present and small quantities of liquid fæces are passed frequently, but soon gastro-intestinal paralysis comes on, and consequently constipation. The eyes on examination are glassy and staring, conjunctivæ and retina are often injected, they may or may not be insensible, and tears trickle down the cheek (said to be due to paralysis of the tensor tarsi muscle, but more likely to be due to over secretion). The eyes sometimes move convulsively in their orbits if the brain is affected. The mouth is partly open and puffed out at the cheek and saliva flows down to the ground, grinding of the teeth is often present. Usually these symptoms last only a few hours before the cow becomes very unsteady on her feet, sways to and fro and goes down, sometimes to rise again once or more. It is seldom that she lies down comfortably, she seems to drop against her will. There are instances where 24 or even 48 hours have elapsed between the time that a cow was first noticed and the time she went down, but what is more common in my district is to have her down when first seen. Once down they lie quietly on the side with the head extended, or more commonly curved towards the flank (this curvature of the head is seen sometimes before they go down and is said to be due to clonic spasms of the muscles of the neck.) Coma sets in, which may be alternated with convulsions, the breathing becomes slow and stertorous, the cow moaning, occasionally bellowing, and seems as if she was quite exhausted or as if some irritant poison was acting on the nervous system.

She might be down in this condition for only six or eight hours if the treatment has been adopted early. Sometimes she may be for 24 or 48 hours, or even three or four days without any sign of consciousness returning. Should the head be raised it falls to the ground as if she was dead, the ears and horns are cold. Tympany is very apt to appear when she is down, and it is very seldom that there is any passage of fæces or urine. Like any other poison acting on the brain this has an exciting and a comatose stage, but in some cases the exciting stage is much longer than in others. This is perhaps due to the poison acting on different parts of the nervous system. However, in some cases almost as soon as she goes down or even before that she becomes restless, excitable, and begins to dash herself against adjoining objects, switches her tail, bellows and struggles violently, the eyes are blood shot and fiery, conjunctivæ injected, and if not restrained she will injure herself irreparably in a very short time. In this form she seems to suffer intense pain, and undoubtedly it is one of the most fatal forms and accidents are very apt to occur with it.

There is yet another form described called the paraplegic, and said to be due to the irritant acting on the spinal cord first. Consequently the first symptom is paralysis, followed usually by all the symptoms of the comatose stage. The temperature is usually below normal, and seldom above 101° F. unless some complication has set in, and she may shiver, yet the temperature does not rise. The pulse varies much. Usually at first it is full and regular, averaging about 70 to the minute. When she is comatose it becomes slow and irregular, and later on in the disease it becomes fast and weak—so weak before she dies as to be imperceptible. The breathing also varies. When first seen it is usually hurried, in the comatose stage it may be as slow as five or eight to the minute; if the cow is violent it often averages 20 to 40, and when lung complication sets in it runs as high as 60 or 80. It is seldom that a cow can swallow, owing to paralysis of the muscles of the pharynx and œsophagus, although eructation is often present. Retention of urine is almost a constant symptom, and it is said to contain albumen, sugar, and even blood in small quantities (Schaak). It is often thick, viscid, and highly coloured, and very apt to undergo decomposition.

Constipation is always a symptom due to paralysis of the sympathetic system of nerves, and this also explains why tympany is present so often. The rectum is often full of dry fæces, and Schmidt remarked that the fæces in the rectum was much harder than that in the bowel in front, consequently he came to the conclusion that absorption is more rapid from the rectum in milk fever than from any other part of the alimentary canal. If chloral is administered in an enema into the rectum it acts quicker than when injected right into the floating colon.

The mammary gland to the naked eye is quite normal in most cases, but it is often described as being hard, congested, swollen, or flabby, as the case may be. I do not, however, consider any of these symptoms special to milk fever. The secretion of milk is always diminished, and usually altogether stopped. This may be the only symptom noticed for some hours before any other sign of ill health appears. In rare cases the secretion continues throughout the attack even after the solution has been injected, and I consider this a very favourable symptom, in fact the most favourable symptom of all, for I have never seen a cow that had some milk throughout the attack dying.

Complications and Sequelæ.

Are very often worse than the disease itself, and in my experience most of the fatal cases are due to complications. Perhaps these were not so prominent when most of the cases died in the comatose stage or were slaughtered. Pneumonia is by far the most common and fatal complication. It usually occurs on the second or third day, and is said to arise from various causes. Perhaps the most common form is that caused by extraneous matters such as medicines, saliva, or ingesta from the

stomach being regurgitated, and this last cause is very apt to occur in the violent form of milk fever, especially if tympany is present or if the rumen is full of solid matter. It is said that it may come in such quantity as to actually choke the cow. Saliva seldom causes it unless some irritating medicine has been administered, such as strong solutions of carbonate of ammonia, which stimulates the secretion of saliva to an enormous extent. Great care should be taken also in administering medicines, otherwise if the pharynx is paralysed it is very liable to go down the trachea, thus causing broncho-pneumonia.

Another cause of pneumonia is the exposure of cow to inclement weather during or after parturition, or even during the attack of milk fever. Also owing to the animal lying on one side and the lungs becoming congested, coupled with a weak heart, which is often present.

One of the first symptoms of lung complication during the disease is frequent breathing, and when the pulse is taken it is generally fast. The temperature is always high, in fact when it is over 103 F. I always take it as a sign of lung mischief being present. But it is on auscultation and percussion that the disease can be localized with accuracy, and usually this is not easily done owing to the position of the cow. Often these symptoms are not apparent until the cow is up, and even for some days afterwards, for how often have we been disappointed with a case that had got over the milk fever and was doing well for some days, only to succumb to severe inflammation of the lungs, may be after a fortnight or even three weeks illness. It is often seen that when lung complications set in the other symptoms become ameliorated, and that often in four or five hours after the temperature rises the comatose stage is passed.

Paralysis in its various forms is common after milk fever. Complete paralysis is rarely seen, for loss of sensation seldom or never takes place, hence the term acinesis would be more appropriate. Any part of the nervous system might be affected, but some parts of the spinal cord especially are affected with more constancy than others—thus the lumbar region often causing paraplegia. If the brain substance isdamaged during a violent attack, or if real apoplexy occurs, consciousness seldom or never returns. Hemiplegia is sometimes met, but paraplegia is far more common. One leg only may be affected, and it is said that this form is the most amenable to treatment.

Paraplegia is said by Williams to be due to "inflammation and red softening of the lumbar region of the spinal cord, and if recovery does not take place in a fortnight it is usually permanent." Although I saw a case in Leicestershire that had been four weeks down before I saw her and yet recovered in about nine days afterwards. Paralysis of œsophagus and pharynx is common during the disease, but sometimes the œsophagus is paralysed after the cow recovers and causes death through choking.

Amaurosis is occasionally seen, and Fleming states that it is usually permanent.

Gangrene of certain parts, such as the feet, limbs, and teats is said to be occasionally seen. The cause is unknown, but most probably due to stasis produced by the weakened heart.

Swellings and contusions of the thighs and hocks are also seen, supposed by some to be due to derangement of the nutritive nervous system, but more likely to be due to the cow dashing herself against the walls and mangers.

Milk metastasis has been described on the Continent and even in this country but nothing is known of its pathology. Yellowish coloured fluid is to be seen running from the urethra or nostrils. It is supposed to be the ordinary secretions mixed with lymph. A registered veterinary surgeon told me about two years ago that he saw a case, and mentioned the form, but he had no idea what it was and asked me concerning its pathology.

Prolapse of the uterus is another complication seen occasionally, and prolapse of the bladder and rectum have been described.

Mammitis should in my opinion be described as a complication. I have only seen one case, this was undoubtedly due to my not having used clean boiling water, and it should never occur if aseptic precautions were taken.

Prognosis.

I must confess that in my practice milk fever is not so amenable to treatment as it seems to have been on the Continent and by some practitioners in this country, for although my district is hilly, and consequently the attack is supposed not to be so severe, I have not had the success Witt, of Stronberg, has had, viz., 96 per cent, and most of these recovered in six or eight hours. Pedomi 94 per cent., Hernfick 92 per cent. Yet I admit that prognosis is much more favourable of late years than it used to be when Frank stated his recoveries at 40 per cent., Saint Cyr 45 per cent., Violet 25 per cent, and Schaak even 10 per cent.

Much depends upon the time we are called in and what has been done before we arrive. If we are called in early we have a good chance not only of saving the cow but also of checking the disease in six to twelve hours; but if the cow has been down six or eight hours and has had 2 lbs. of Epsom Salts favourable prognosis should not be given. Cases that come on suddenly are generally more severe, also the sooner after calving it appears the more fatal they are.

Milk fever often recurs, and the succeeding attacks are more fatal. The condition as well as the breed of the animal should be taken into account, and I consider animals that are not in a plethoric state but have been well fed on nitrogenous food previous to calving are much more liable to be affected than others perhaps kept in better condition but have not been so well fed. I do not know of any symptom or group of symptoms that indicates recovery or death in this disease, for very often in cases apparently mild at the commencement, from some unknown cause they become comatose, show all the aggravated symptoms, and may even die in less than 24 hours. The reverse also holds good, for often cases that at first sight we might consider hopeless recover in from six to eight hours, and this is especially the case since Schmidt's treatment has been adopted.

Yet there are certain symptoms that help us in the prognosis of milk Fever. If tympany sets in early, the extremities and skin cold, sensation lost in the eye and especially if it is of a grey colour, inability to swallow, pulse weak and irregular, and almost imperceptible, the temperature below normal, the tongue small and hard, breathing hurried and through the mouth, no secretion of milk, and the coma usually in these cases become deeper and deeper until death supervenes.

Amongst the most favourable symptoms are the following: normal temperature of the body, natural colour of the mucous membrane, the passing of fæces or urine, regular and slow pulse, the temperature above 100 F., but below 103 F, and even slight secretion of milk. Should one or more of these symptoms be present the coma usually becomes less, the breathing more regular and soon the cow becomes cognisant to sound and adjoining objects and may be up in a few hours time, or may lie comfortably and naturally for some hours.

Morbid Anatomy.—The pathological changes that are special to milk fever are not well marked; in most cases they are conspicuous by their absence, and that a disease that has so well marked and constant symptoms should leave so few structural changes is remarkable, especially

since the poison seems to be acting mostly if not entirely upon the nervous system. It depends, however, to a great extent upon the length of time the cow lives. In those cases that die in 12 or 16 hours there is hardly any changes to be seen on post-mortem examination, but if they live for three or four days the changes are generally more distinct. In cases that recover spontaneously the structural changes must be practically *nil*. The muscular tissue is usually dark in colour, otherwise normal, except when the cow has sustained injuries. It is seldom fit for human consumption, although it has not been proved to be harmful. The digestive organs are generally normal, with the exception of derangement of the sympathetic nerves.

Impaction of the omasum and congestion of the large blood-vessels of the abdomen is often present, due to paralysis of the vaso-motor nerves. Petechial spots may also be seen on the mesentery and on the mucous membrane of the alimentary canal throughout. The lungs are generally congested, and often show signs of pneumonia in its various stages, and the bronchi often contain foreign matter. The uterus is said by Noquet and others to be contracted and to have a fœtid smell; but in most cases it is found quite natural. The bladder is sometimes inflamed, may be owing to retention and decomposition of urine. Macroscopically the mammary gland is not much altered, but under the microscope the blood vessels are congested and the cells are much more active, although these changes may be due to the organ being congested owing to its greater supply of blood, or to the natural activity of the gland after calving.

The most characteristic changes are to be seen in the nervous system. Williams says that "extravasation of blood is to be found at the base of the brain on the medulla and the cervical portion of the spinal cord. In some cases actual rupture has not taken place, simply great congestion with red spots, and in other cases not even congestion—having in all probability disappeared after death or perhaps immediately before. In all instances there is fluid in the ventricles and the brain substance is loaded with serosity." Violet found congestion of pia mater, and ventricles filled with fluid. Brayard states that the brain meninges are injected. Hadous found air in cerebral vessels. Noquet, St. Cyr, Kalbert, Thomas, and others found spinal cord and brain congested and covered more or less with exudation. In my experience apoplexy is an exception—not the rule, for I have only seen it once, and I doubt if it was then the cause of death as it was situated in the fissure of Sylvius along the course of the middle cerebral artery. The ventricles are generally filled with fluid, particularly the lateral and fourth ventricles, and there is generally some fluid in the spinal cord, but this exudation is not characteristic of milk fever as it is often seen in cases of ante-partum paresis, particularly in the lumbar region, and in some cases the ventricles of the brain are also filled.

In a case of milk fever that was killed on the 14th day owing to paraplegia the lumbar region of the spinal cord was filled with fluid, also atrophy and disintegration of the cord had taken place particularly of the crossed pyramidal tract. In a case that had recovered but succumbed 14 days later to an attack of pneumonia the brain and spinal cord were quite normal. But in another case that died on the 3rd day there was decided extravasation of serum into the ventricles, great congestion and slight petechial spots of the meninges, but no trace of apoplexy.

Etiology.

It is an acknowledged fact that the better animals are bred the more prone they are to become diseased, and this is also the same with the various organs of the body: for the better developed and the more complex any organ becomes the more apt it is to become deranged. The mammary gland of the cow like those of all other mammalians was originally intended for the rearing of the offspring. Since the cow has been domesticated the mammary gland of certain breeds after careful selection for generations has become developed to a state of great perfection—in other words these cattle have been practically converted into milking machines: hence their mammary glands require much more care than is the case with indifferent breeds.

The most important cause of milk fever is this abnormal development of the mammary gland, and anything that tends to bring the gland into greater activity than to supply the young may be considered a predisposing cause, such as feeding on nutritious and nitrogenous food, and this is especially the case if they are well fed prior to calving time, when they are dry. In my experience cattle that are not very plethoric but receive extra rations for some weeks previous to calving, as is the custom in my district, are more liable than those that are kept in good condition all the year round. As stated before, some breeds are more liable than others to milk fever, particularly "deep milkers," such as those of the Channel Islands, Shorthorns, etc. Where bovines are reared for flesh more than for milk it is seldom seen. Even in these predisposed breeds there are some animals that are more predisposed to it than others, and amongst the chief causes in these cases are mentioned age, confinement, removal of calf, etc. The age has great influence upon its occurrence, for it is seldom seen during the first or second calving, more often after the third, and most often perhaps after the fourth and fifth calving than any other, that is to say the cow is at its best during this period. Milk fever is apt to recur, hence a previous attack predisposes the subject to a second. Permanent confinement in a stable or any other close place is worse than in an airy shed.

Some ascribe great importance to the temperature, particularly exposure to cold. Ayrault believes that the cold air enters the uterus and drives the blood from its mucous membrane, thus stopping its secretion, and consequently milk fever. Removal of the calf has for many years been quoted as a cause; but it occurs before calving and also when the calf is with the cow.

Another cause mentioned is the removal of milk by hand, thus emptying the udder at once, but if this was a cause the shock would be greater at the first calving; and it occurs occasionally before the cow calves, consequently before she is milked.

Pathology.

A large number of hypotheses have been propounded during the last 30 years by eminent pathologists to account for this malady, many of these have turned out to be baseless assumptions. Others are still put forward as satisfactory explanations of the phenomena. None of them has yet found adequate verification. In fact almost every organ in the body has in its turn been connected with the disease.

The following are few of the most feasible hypotheses:—

1.—Anæmia of the nervous centre. (Haubner and Prehr).
2.—Hyperæmia of the brain (Frank) owing to the division of the internal carotid into several branches.
3.—Constipation, which causes leucin, tyrosin, and other poisonous substances in the alimentary canal, and consequently blood poison.
4.—Derangement of the nervous system through the nerve force that should be expended on calving not being used up, owing to an easy deliverance.
5.—Presence of something abnormal in the blood; once it was thought to be milk, later it was supposed to be air, and later septic matter from the uterus or any other organ.

In 1885 Schmidt propounded the theory that it was a toxin, something similar to ptomaine poisoning in man,

and after careful investigation by him and others he thought that it was generated in the uterus from the albumenoid matter contained there. Of late years Schmidt and other authors have favoured the theory that the poison is originated in the mammary gland, and since the metabolism of the gland is very active at this period it is very striking that more attention has not been given to this organ.

To be able to comprehend the various theories brought forward as to the mammary gland being the source of the ptomaine, an intimate knowledge of its anatomy and physiology is essential. It is a racemose or compound gland, situated in the inguinal region in the cow, and is divided into four distinct parts, or quarters, each of which terminates in a teat. Structurally it is composed of yellow glandular tissue, consisting of numerous lobes united by cellular tissue. Each of these lobes is again made up of small lobules composed of minute ducts and numerous small acini, in which the milk is secreted and conveyed to the ducts called the gallactophorous ducts or sinuses, and in the cow each of these sinuses may hold a quart or more.

The minute structure of the lining of the acini consists of membrana propria of flattened epithelial cells lined by low columnar cells, which are often filled with fat globules of various sizes. When the gland is at rest the lining epithelium of the acini can hardly be distinguished, and usually few nuclei scattered within the lumen of the duct without any protoplasm surrounding them is all that can be seen. The membrana propria usually increase considerably as well as the cellular tissue. During lactation the epithelial cells are polyhedral and evenly distributed over the acini, and are observed to contain fat globules in various sizes which is thrown into the lumen of the duct and carried into the lactiferous sinus. This secretion, viz. milk, is rich in sugar and fat, but poor in albumen.

During the last few days of gestation there is great change in the epithelium that lines the acini, and from the few nuclei that are seen when it is at rest large irregular cells gradually appear and soon the alveoli becomes blocked with a mass of epithelial cells partly degenerated, but these cells do not undergo fatty degeneration as was once thought, as the material found in these degenerated cells is colloid. The fluid secreted during the first days after parturition is called colostrum, is of a yellowish colour, thick and viscid. It is extremely rich in albumen, so rich that when it is slightly heated it becomes solid. There is yet practically no casein in it, and it is very poor in lactose and fat, hence the lactiferous sinuses are filled with a secretion extremely rich in albumen which is very prone to undergo a change.

The secretion of milk is little understood, but as in every secreting gland it has the power of separating from the blood by its cells various materials which do not exist as such in the blood, or rather in its plasma which passes from the blood vessels into the interstices of the gland textures. Milk is both a secretion and an excretion, and the nerve supply of the gland is not well understood, but after both the spinal and sympathetic nerves are severed the secretion still continues. To some extent the nerve supply exerts its influence by acting on the blood supply, but it is also said to have special influence on the secreting cells, called the trophic influence, which acts either directly or by reflex action on them.

Once a substance is formed in the mammary gland of the cow it can easily gain access into the circulation, for absorption takes place very rapidly from the gland, as evidenced in cases of septic inflammation of the gland when secondary abscesses are only too often seen in different organs of the body, or when septic matter is absorbed thus causing blood poisoning. Also seen in cases of stricture of the teat, when great quantity of fluid is absorbed in a very short time.

The colostrum is very rich in albumen, and the richer it becomes the more susceptible the cow is to milk fever. (Henfrick). Albumen here, as anywhere else, is prone to change, particularly since it is enclosed in a sac and has no means of escaping unless the cow is milked. The most likely derivatives from the albumen are proteoses or albumoses, and once they are formed they can easily find their way into the circulation. Some of these may act as poison to the system when they are formed in large quantities, as is seen in the ptomaines generated in the alimentary canal, also in uræmia. "Modern knowledge shows that a poison circulating in the blood stream may pick out but one portion of the nervous system, or even produce a lesion on one side of the body only. Lead and arsenic afford numerous instances of such actions. Both may cause symmetrical peripheral neuritis, but what is more remarkable is that either of them may cause a patch of focal myelitis. Arsenic not infrequently causes Herpes, which in all probability is dependent on a nerve lesion. One and the same poison may produce opposite effects at different times or in different cases. The mere fact that uræmic manifestations are sometimes localised and are not always uniform does not militate in any way against the view that their source is a toxic one. For these reasons uræmia is looked upon as dependent upon a toxic material in the blood and the excitation of the nervous system by this poison, and the great variety of uræmic manifestations has suggested the possibility that more than one toxic body is present."—*Albutt's System of Medicine.*

Most probably some of the colostrum undergoes this change during normal parturition and is absorbed likewise into the system; the liver acts upon it as it acts upon other poisonous substances and thus prevents this intoxication; but in heavy milkers it is very probable that the ptomaine is generated in such a quantity that the liver is unable to act upon it all and that some passes into the circulation. When the poison is absorbed by the liver in a large quantity it may act upon the liver itself, thus hindering it from withdrawing any more of the poison from the blood. Consequently the whole of the poison in this case would be allowed to pass into the blood, and the liver may even throw some of the poison that it has absorbed previously into the blood stream. Consequently the attack would naturally come on suddenly.

Treatment.

The treatment will be divided into management, prophylactic treatment, and medicinal treatment.

Management.—The management of a cow affected with milk fever is very important, in fact much more so than with most diseases. Medicines are practically of no avail unless good nursing can be procured, and to be successful a great amount of personal attention must be paid to these cases by the veterinary surgeon, for there is no doubt that in the past a great number of cattle were actually killed by carelessness of the attendants. Usually the cow is in a stall, and another cow fastened by her. This other cow should be removed at once. If the cow is not down already, make her a comfortable bed and cover it with an old sheet so that when she struggles she can not throw the bedding away. The udder should be stripped as it can be done much easier than when down. Once down she should be kept well on her sternum by means of bags filled with straw, potatoes, earth, or sand—earth or sand does not shift away the same as straw. When tympany is present it is often relieved by raising the cow on her sternum or by turning from one side to the other. If this fails a little friction might prove useful, or even irrigation with cold water. Should all these measures fail, she must be punctured, and any medicine that will check fermentation might then be administered straight into the rumen. Some practitioners puncture at once when they see any sign of tympany, but unless the cow is violent and in

danger of regurgitation of food into the trachea, I never do this until some of the other measures have been tried. The bed should always be elevated when there is tympany. How long the cow should be allowed to lie on one side depends upon conditions present ; sufficient strength should be at hand when it is done to turn her neatly and promptly. The bed should be laid evenly before turning her, the legs well flexed under, and the head should be taken care of, otherwise she might knock it against something and thus cause apoplexy of an already congested vessel. After she is over the legs should be stretched out, and care should be taken that the breathing is not obstructed in any way, especially when she is in a comatose stage.

In administering medicine great care should be taken, and I do not think that attendants should be allowed to give medicine at all if it is possible for the practitioner to attend. If paralysis of the pharynx is anticipated she should be drenched with cold water first. I drench them almost altogether with the stomach pump, and I have never seen any bad result. It is an easy, safe, and expedient way. None but volatile medicines should be given, as the stomach is practically inert, and watery solution is preferable to oily substances, as it causes less mischief should some of it go down the trachea. The rectum should be emptied with caution (owing to the tendency to hæmorrhage) and enemas may be given. If tympany is troublesome, turpentine, or chinosol can be advantageously mixed with it. If there is any difficulty in introducing the stomach pump such medicines as chloral, spirits of nitre, æther, etc., can be mixed with the enema, and the effect is much the same as by the mouth. The urine should be drawn two or three times a day, as it soon undergoes decomposition. It is seldom that a catheter is required, as it can be done by tickling the urethra.

The animal should be clothed according to the season and circumstances, and the ventilation should be carefully looked after, for the attendants at night often shut all the doors and windows, etc. In quiet cases one attendant is all that is needed, but with other cases three or four are often required. When the cow is attacked on the field and is unable to walk to the byre, and should the weather be fine, it is better to fix a tent over her in the field, and keep her well clothed. In violent cases restraint must be used, the head should be fastened with a rope round the horns and fixed somewhere above and a truss of straw below it. Also in these cases benefit is often derived from a straw rope fixed round the horns and a little cold water poured over the straw every few minutes, as it is supposed to relieve the congestion of the vessels of the brain. Bleeding when done with discretion is beneficial, for it relieves the severe symptoms seen in a plethoric cow at the outset of this disease, viz., the high temperature, full and bounding pulse, etc., and also takes away a certain part of the poison that is present in the blood, but to bleed indiscriminately does more harm than good.

Repeated withdrawal of milk and massage of the udder is beneficial. If the injection treatment is carried out it should be done on strict aseptic principles. When the spinal cord is supposed to be congested in the early stages, the application of liniment or mustard to the back might prove beneficial by causing counter-irritation. If the cow is down for more than 2 or 3 days great care should be taken to keep the bedding dry, otherwise sores soon appear, and she should be turned 3 or 4 times a day. After the first 3 days there is no necessity of keeping her on the sternum, as tympany rarely occurs after this time. She should be raised every day with the aid of the slings, and if there is no improvement-ment by the 6th or 7th day severe blister may be rubbed along the spine and the Actual Cautery or electricity may be tried ; although it is common to see them down for 10 days or more and rise of their own accord afterwards. The feeding for a few days after recovery should be scanty, and if the cow has had such medicines as aether and turpentine care should be taken to clothe her well for a few days.

Prophylactic treatment.—The prevention of milk fever has excited great attention since an early date, and if it is possible to prevent such a fatal disease it should be our earnest endeavour to do so as it is a source of great loss, but until we understand its cause better it is impossible to expect much progress. Anything that tends in a susceptible animal to bring the milk gland into great activity before and soon after calving should be avoided, such as giving nutritious and stimulating food, keeping the cows in a plethoric condition. Everything that tends to reduce its abnormal development should be encouraged, such as milking the cow up to calving time almost, exercise allowed or even forced if necessary, and this should especially be the case in towns, and since it is a disease brought about by domestication she should be kept in a condition as natural as possible. Other depletive methods have also been adopted, such as the milking of susceptible cows for some days before calving, giving purgative and other medicines, bleeding, and even counter-irritation. Bleeding is considered by Shipley to be almost a specific, and he says that he never had a case if the cow was bled a few days prior to calving. In violent cases some recommend what is called the wet pack system, viz., a blanket is soaked in cold water and laid over the cow, and over this to keep the heat in an old mackintosh or oil rugs are laid until she is sweating profusely, and this is supposed to relieve the congestion of the brain by the withdrawal of blood into the skin. Others advocate bleeding three or four times from the jugular during the last month of pregnancy. Harvey condemns the practice of bleeding, and Violet says that it is not a safe preventive. Myself, I have not had the encouraging results others have had from venesection. Some years ago if a cow was plethoric it was the general custom to give her from 14 to 18 ounces of sulphate of magnesia, mixed with a carminative, every four or five days for some time before calving, and even then they used to have milk fever much the same. Tartar emetic in one ounce doses every six days is highly spoken of by Bunt. Others advocate nux. vomica, tr. opii., turpentine, sulphuric acid in doses of four to eight drachms, tr. aconite and chloral.

In a subject that had milk fever once I administered K I and chloral internally daily for ten days with good result, and in another instance that was very bad last year I administered this year K I internally for four or five days prior to calving, and in about six hours after calving I injected 50 grains of potassium iodide into the udder with apparent good result. In a dairy in Leicestershire of 17 cows prior to 1890 there used to be for some years, on an average three cases a year, and 80 p.c. of these were fatal. They were advised to keep the cows for six weeks prior to calving on dry food, and since then no milk fever occurred, although the cows are in as good condition now as they were then. In an adjoining farm where 12 cows are kept, they have tried the same method and only two cases occurred during the last seven years

Fleming advocates the application of mustard or some other irritant to the loins of cows that have calved easily and are likely to become affected, as the disease seldom occurs after the genital organs are injured or irritated.

As a preventive, medicinal treatment is not very satisfactory unless it is combined with some of the other methods already mentioned, but I would like to learn your views as regards injecting KI. into the udder previous to or soon after calving.

Medicinal Treatment.—There has never been such divergence of opinions in connection with the treatment of any disease as with milk fever. This is mainly due to the fact that the symptoms only were treated, and these

are so varied that almost any deviation from health may be seen at different times in the same case. I might venture to say that almost every medicine in the Pharmacopœia has been tried at various times with various result; from the most drastic purgatives to the most powerful astringents, and from the best stimulants to the most severe sedatives. It is quite unnecessary to enter into details of the different methods of treatment that have been adopted, but I may say that in connection with every theory as to its causation there has been a special line of treatment. There is no doubt but that Schmidt's treatment supersedes all other methods known at present.

Schmidt's Treatment.—The udder should be stripped and washed with soap and warm water, and disinfected with a weak solution of lysol or chinosol. Seven to ten grammes of potassium iodide is dissolved in a litre of freshly boiled water (100 to 150 grains in a pint and three-quarters of water.) When the solution has cooled to about 40 C. it is infused in equal portions into the udder at the four teats. The instrument used generally is a special syringe, but a milk syphon fastened to an ordinary enema syringe might do. The instrument should be disinfected, and the metal part boiled. The infusion has to be accompanied by massage to equally distribute the solution in the udder, and according to Schmidt the air that gains access into the gland helps to liberate the iodine. The iodine is said to neutralise the poison that has not been eliminated from the udder, and also to act to some extent upon the poison that has had access into the blood stream.

Instead of using potassium iodide, Kinnerman recommends Lugol's solution in 20 gram doses into each teat. Haupman, of Warnsdorf, administered potassium iodide internally in doses of 10 grams. I treated one case with two drachm doses internally in conjunction with the injection. Pedomi has had good results by rubbing 10 per cent. ointment on the gland; also by injecting a solution 1 to 200 of potassium iodide into the blood. Some use solution of chinosol, and others lysol. Also salt solution, and even boiled water is said to give good result. That iodine has a special action upon the mammary gland is certain, for often in the treatment of actinomycosis diminished secretion of milk is noticed if potassium iodide is given in large doses, and this is also seen in women (Bryant on "Diseases of the Breast.")

It is seldom that a second injection is necessary if the treatment is adopted early, although a second and even third injection can be used, but they are usually half the strength of the first. It should not be repeated in less than twelve hours, although as much as 20 to 30 grammes of potassium iodide has been injected in one day without harm.

The experiments of Pedomi and others tend to prove that iodine administered by the mouth, blood stream, uterus, or even by the lymph stream (by rubbing it on the mammary gland) act on the poison.

I cannot say that I have seen as good results as Ehling, viz., a cow had been down two hours and in fifteen minutes after injection tympany vanished, rumination and eructation recommenced. In another case he states that after the cow had been down eight hours, immediately after the injection, the pulse was more regular and the temperature rose 10 F. Schmidt also claims that the temperature rises 1 F. in most cases and the general symptoms rapidly improve, and no doubt this is to be seen sometimes, especially if treatment is adopted early.

Since a certain amount of the poison has entered the blood when we are called in, and that this gives rise to symptoms which endanger the life of the animal, we must treat these symptoms as well as the actual cause. What this treatment consists of depends to some extent upon the case.

If the case is seen before she goes down I administer 2 lbs. of treacle and a mild aperient, combined with about 2 grs. of strychnine. A stimulating liniment is also rubbed along the spine and head. Schmidt advocates aloes as an aperient, but it is seldom that I give any laxative other than treacle or butter.

Chloral is the medicine that is used most generally and it is said to act on the poison through its antiseptic, properties, as well as abating the nervous excitement. If it is given in large and frequent doses the pulse and respiration should be guarded, since it may cause cardiac failure. Hence it is contra-indicated when a weak heart is present. Sometimes it is combined with camphor as an electuary; or with such stimulants as sweet spirits of nitre or alcohol. Potassium bromide is often prescribed with chloral, and is very useful in violent cases. It may also be conjoined with a grain dose of digitalin twice a-day to relieve cardiac excitement. If the body temperature is low and changeable, the pulse and respirations weak, stimulants are indicated, such as carbonate of ammonia, camphor, alcohol, caffeine or strychnine. If tympany is present turpentine or carbonate of ammonia may be used. If the beast is weak caffeine sodio salicylate should be given subcutaneously in doses of 15 to 20 grains every 3 hours, as it is a first-class heart and respiratory stimulant, besides being an antidote for ptomaine poisoning. It may sometimes be conjoined with 1 gr. dose of digitalin advantageously. If the patient is in a state of collapse 1 gr. veratrine and 2 grs. strychnine should be injected under the skin every few hours, or alternated with caffeine and ether. Alcohol, ether, turpentine, etc., should be passed into the stomach by the pipe. Complications are treated in the same manner as when they appear irrespective of milk fever.

Thanking you Mr. President and gentlemen for your kind and patient attention during my attempt in producing these notes before you, I will only add that if a good discussion follows all that was aimed at will be fulfilled.

EXTRACTS AND NOTES

ROYAL AGRICULTURAL SOCIETY.

The first meeting of the Council of the Society for the present year was held at 13 Hanover Square, the Earl of Coventry presiding.

The Hon. CECIL PARKER presented a report from Professor M'Fadyean on Anthrax. A letter had, he said, been received from the Devon County Council, forwarding the following resolution, and inviting the co-operation of the Society in bringing the subject to the notice of the Government: "That in view of the national importance of an adequate supply of sound horses this Council is of opinion that legislation should be introduced empowering County Councils to prohibit the use for hire within their districts of stallions suffering from Hereditary disease."

Mr. ASHWORTH said he was sure that the Council of the Society were fully in sympathy with the main object which the Devon County Council had in view, viz., to secure an adequate supply of sound horses; but whether this could be effected by legislative interference was another question. By the use of these unsound stallions the animals bred were useless, and instead of encouraging the farmers it disgusted them. He contended that it was just as culpable to conceal the unsoundness of a horse which was travelling as it was to sell margarine for butter, which brought anyone guilty of such an offence into the Police courts.

In the course of discussion the chairman observed that the question was one of considerable importance. He thought it would be sufficient on the present occasion if a reply were sent to the Devon County Council stating

that the Council of the Society were fully conscious of the national importance of an adequate supply of sound horses, and that by their rules, under which breeding animals in the classes for horses at the Society's shows were required to be certified as free from hereditary disease before receiving prizes, they were doing all they could to encourage the breeding of sound horses. A reply in this sense was agreed to, and the report of the Veterinary Committee was adopted.—*The Morning Post.*

THE HORSE AS A MACHINE.

Lord Suffield presided over a series of demonstrations which took place recently at Messrs. Maple's establishment in Camden Street, N.W., kindly placed at the disposal of Mr. T. H. Brigg, who entertained a fairly numerous company with a lecture upon the above subject. Amongst those present were the Earl of Errol, late colonel of the Royal Horse Guards (Blue), Professor W. Pritchard, and many other well-known lovers of the horse, all of whom agreed that the observations of the lecturer displayed an exceptional grasp of the subject, and were likely to accomplish a revolution in the gear of draught horses if they were dispassionately considered by the owners of studs. The lecturer was largely assisted in explaining his theories by models both of horses and of the appliances which his experiments have taught him to believe will reduce the wear and tear of horseflesh, whilst in addition to the mechanical illustrations, some extremely interesting experiments were made outside the lecture-hall with a pair of big horses attached to a van, which was kindly lent by the Great Northern Railway Company. The chief features of Mr. Brigg's lecture were his demonstrations, which showed how to increase and diminish the draught power of the horse, and the erroneous principles of harnessing animals which are required to draw heavy loads and back them as well. Having shown by a series of practical demonstrations, both with models and living horses, that when moving forward a horse has most of his weight on his forelegs, and when backing on his hind ones. Mr. Brigg introduced a most simple and yet serviceable invention of his own which he has styled the "Plywel," and which he affirms will so reduce the strain upon horses driven in pairs, that the animals will not only last longer, but that they can draw considerably heavier weights without increasing their exertions. The Plywel consists of a short, stiff metal rod, some 15 or 18 inches in length, which is loosely fixed to the pole, just opposite to the lower part of the horse's collar, with which it is connected at the kidney link. This Plywel, it will be seen, prevents the horse moving more than a little over a foot either towards or from the pole, and consequently necessitates an equal strain on both traces. Being capable of being moved upwards or downwards it is not in the way of the animal if he should by chance fall, whilst it is kept in position by the pole chain which is attached to the end nearest to the collar, so that it cannot give when the vehicle is being backed. In short the Plywel appears to be a very valuable and ingenious contrivance by which all drivers of draught horses, light or heavy, can ensure their vehicles being driveu with increased security and additional comfort to their horses, and it is added that large numbers are already in use in large stables, amongst which are those of His Majesty the King, who as Prince of Wales first inspected the invention at the York show of the Royal Agricultural Society. Mr. Brigg is also very emphatic in his denunciations of a low pole, as his experiments have convinced him that the end should be at about on the level of the bottom of the collar and not below it as is usually the case; whilst he shares the opinions of many practical horse owners that greater facilities are afforded horses when drawing heavy loads if the splinter-bar is set low. On this subject, however, Mr. Brigg is careful to point out that under certain circumstances a low bar is prejudicial to ease in work; in fact, a higher one than usual is preferable, consequently some arrangement for providing a moveable equipment might be advantageously devised. At the conclusion of a very interesting lecture, the subject of which is well worth the attention of all horse-owners the company dispersed after having passed a most cordial vote of thanks to Lord Suffield for presiding, upon the proposition of the Earl of Errol.—*The Morning Advertiser*

Drugging Horses.

Poison pedlars are told in a recent issue of *The Globe* that they must cease to traffic in poisonous drugs of a more or less deadly character, if they wish to be left alone. According to a correspondent of *The Yorkshire Daily Post*, chemists are sometimes unjustly blamed for the acts of a class of men who make a practice of supplying poisonous drugs to farm lads who have the care of horses, and *The Globe* now takes up the subject, pointing out that the lads, having discovered that the administration of certain drugs, notably arsenic, improves the appearance of the animals in their care, buy these "coat improvers" with their own money and administer them without the knowledge of their employers. If application were made to some chemists, secrecy could not be relied on, whereas the pedlar knows when to be silent. The result is said to be that in rural Yorkshire, and probably in other counties, the poison pedlar carries on the illicit business, and makes considerable profits out of his youthful customers. As they have only the vaguest notions as to the quantities which may be safely used to produce the desired effect, and as the vendor is not much better informed, farmers are frequently puzzled to account for symptoms of poisoning among their horses, and attribute the outbreak to some cause wholly different from the real one. The correspondent of *The Yorkshire Daily Post*, already mentioned, states that the lads have no evil intention, but each is anxious to have the best looking team when a visit has to be made to the nearest market town. He adds that, as farm hands are better educated now than they were a few years ago, it would be well if agricultural clubs were to have lectures on the management of agricultural horses delivered at suitable centres during the winter months, by some experienced veterinary surgeon, and thus by means of sound teaching remove destructive ignorance.—*Pharmaceutical Journal.*

Horses in South Africa.

In the House of Commons Mr. J. A. Pease asked the Secretary for War if he could state how many horses had been captured or taken in South Africa during the war; how many had been purchased there, how many purchased in the United Kingdom, British dependencies (other than those in South Africa), and other countries, for the use of the British forces in South Africa; and what had been the average price paid per horse for the horses drawn from each of the above areas up to the latest date for which information was available. Mr. Brodrick, in replying, said the number of horses captured in South Africa, which had been reported by Lord Kitchener, amounted to 89,705. It should be remembered that in the number of captures all horses were enumerated, and not only those suitable for military purposes. About 25,000 horses had been reported as commandeered and purchased. The numbers purchased in other countries between October 1st, 1899, and Dec. 31st, 1901, were as follows:—United Kingdom, 59,800; South America, 25,872; United States of America, 77,101; Canada, 11,304. Horses shipped from Hungarian ports, 23,936; Australia, 20,015. In South Africa, the

total number of horses and mules purchased amounted approximately to 228,000. The figures of horses and mules canot immediately be separated. The publication of the exact prices has always been declined.—*Live Stock Journal.*

The Brown Institution Lectures.

The Senate of The University of London announce that, in accordance with the Will of Mr. Brown, a course of Five Lectures, will be delivered by the Professor-Superintendent (J. Rose Bradford, Esq., M.D. D.Sc, F.R.S.) on "The Protozoa in their relation to Disease." at the University of London, South Kensington, S.W., on Tuesdays, February 24th, and March 4th, 11th, 18th and 25th, at 5 o'clock each afternoon. The Lectures are free to the Public.

CORRESPONDENCE

VIVISECTION.

Sir,

Your leaderette in your last issue of *The Veterinary Record*, under the above heading, would not have received any attention from me had you confined your remarks strictly to facts. I am not foolish enough to suppose for one instant that your humanitarian principles would lead you to sympathise with the subject under consideration, but as a responsible Editor I cannot help feeling surprised that you openly call in question the truth of the facts I introduced into my address.

I do not propose to take the trouble to explain the jumble you have got into as to the authorship of the information I relied upon, further than to state that Dr. Crile was the man who performed the revolting experiments at University College which you refer to, particulars of which you can learn for yourself in his own book entitled "Surgical Shock," published in 1899 by Lippincotts, of Philadelphia and London, I assume that even you will believe the man who says he performed these experiments, and if his word is not enough the authorities at University College might perhaps, to such a provivisector as yourself, be disposed to reveal the circumstances.

Of course Ferrier, Charcot, Goltz and Treves are not anti-vivisectionists, I should not have quoted them if they had been. My object is to prove the system erroneous and useless out of the mouths of vivisectionists themselves. Your attempt at drawing a red herring across the line of scent may be very clever, but will hardly deceive those who study the question with a desire to arrive at the truth.

I shall take the liberty of forwarding a copy of *Scientific Research* that you may have the opportunity of perusing same if you think fit; also Dr. Charles Bell Taylor's essay, if you condescend to look them over you may possibly discover what a hash you have made in your editorial criticism.—Yours truly,

J. Sutcliffe Hurndall.

Sussex Villas, Kensington, W.
February 15th.

Sir,

I have read with great interest in your last week's edition of *The Veterinary Record* Mr. J. S. Hurndall's most able and eloquent address which was read on Jan. 31st before the Royal Counties Veterinary Medical Association, at the Great Western Hotel, Reading. The subject of the address being "Experimentation on living animals." Now I firmly believe that the experiments which Mr. Hurndall has quoted did take place, and that a man like Dr. Charles Bell Taylor would never have written a book on the subject, had it published, and brought before the public unless he could prove what he had written. In the leader on the subject dealing with a paragraph, viz., "Surgical Shock," it says that "such a thing was done at University College will not be believed by any veterinarian unless upon better evidence than Dr. C. Bell Taylor." Well, I beg to differ, as I believe Dr. Taylor to be a truthful man.

In dealing with another paragraph in which Mr. Hurndall says vivisectors "claim to be in pursuit of science," it says "surely the worst of them may be allowed this claim, even if we deny their methods are right." Well, there is nothing like giving the devil his due, as I hope he will some of the members of this profession one day, as no doubt a lot of us sprang from the forge, and as far as I can see are very likely to go back into the fire.

Now in my opinion a man who experiments on living animals is not a man because he has become void of the reason that distinguishes a man from a beast, and I maintain it is the duty of every man who regards a doctrine as true to do what he can towards spreading the knowledge of it, leaving the result to be what it may. This is what Mr. H. has done, and although I have never seen the gentleman, nor heard of him before, I intend to do my utmost to favour his cause, and I feel sure there are other veterinary surgeons who will do the same.—Yours faithfully,

George Morris Pomery.

"AUTHORITIES" ON VETERINARY SURGEONS.

Dear Sir,

In your issue of the 8th inst., you have printed a cutting from *The Meat Trades' Journal* in which the Lord Chief Justice (King's Bench Division, Ireland) is reported to have said, "Taking horses, I prefer the opinion of the dealer as to the condition of the animal to that of the average veterinary surgeon." Now if this is his real opinion—a Lord Chief Justice's statements should surely express that—then the horse dealers in Ireland must be very different from those in England. How many of that fraternity in our country would be glad if their clients agreed with his lordship?

But looking at it from a more serious point of view does it not strike one as rather a sweeping assertion to have made? Such a remark made publicly by a man in Lord O'Brien's position, whose wisdom and judgment are beyond question, and then circulated in a paper is not calculated to increase people's faith in the competency of veterinary surgeons to pass an opinion as to the *true* condition of an animal.

Evidently Colonels St. Quintin and Maclean were of the same opinion as his Lordship for they stated that they could dispense with the services of a veterinary surgeon in purchasing remounts. To what an extent the statements of a dealer are to be trusted is seen from the class of animals which were shipped to S. Africa.—Yours faithfully,

One with a better opinion of the Profession.

CHINOSOL.

Dear Sir,

Through the courtesy of a firm of veterinary surgeons we have lately been made acquainted with a gross abuse practised by a well-known wholesale drug house, in selling the article Chinosol in packages not issued by us, and not bearing our recognised label and trademark, with the exception of the word "Chinosol" which is a trademark word established by us for a number of years. Moreover, the buyers in this case asked for Chinosol pure powder, and were supplied with an article not of that quality, and were also considerably overcharged.—We remain, yours faithfully.

The Chinosol Hygienic Co.,
B. Kühn, *Manager.*

OBITUARY.

T. H. Ward, M.R.C.V.S., Henham, Essex.

Mr. Ward was found dead on Monday, 10th inst., in a wood. An inquest was held at Widdington. The evidence showed that deceased went into the wood, where he broke the neck of a glass bottle, and with the fragments cut two deep gashes in his wrist, severing the arteries. He had only been out of a lunatic asylum for a fortnight.—*Morning Leader.*

Communications, Books, and Papers received.—Messrs. G. Mayall, J. A. Todd, J. S. Hurndall, J. McKenny, G. Pomery. Lt.-Col. Nunn. "The Doctor Sahib."
American Veterinary Review. The Cork Examiner.

Veterinary Societies—Addresses.

Alterations for this list must be duly notified by the Secretaries

Bombay V.M.A.
Pres Major Jas. Mills, M.R.C.V.S.
Vice-Pres: Vety.-Lieut. F. S. H. Baldrey, M.R.C.V.S. A.V.D.
N. D. Dhakmarvala, Esq., G.B.V.C.
S. N. R Ranina, Esq., G.B.V.C.
N. Narsingrao, Esq., G.B.V.C
Hon. Sec. & Treas: V. E. Vakharia, Esq., G.B.V.C.

Border Counties V.M.S.
Pres: Mr. John Steel, M.R.C.V.S., Wigton
Hon. Sec. & Treas: Mr. H. Thompson, M.R.C.V.S., Aspatria
Meetings, Second Friday of Feb., June, and October

Calcutta V.M.A.
Pres: Mr. Greenhill, M.R.C.V.S.
Hon. Sec: Mr. T. Assheton Smith, 156 Dhurrumtollah

Central V.M.S.
Pres. Mr. A. Rogerson, F.R.C.V.S., 228 Camden-road, N.W.
Hon. Sec: Mr. E. Lionel Stroud, M.R.C.V.S.,
29 Spring-st., Hyde Park, W.
Meetings, First Thursday in each month, except August and September, 10 Red Lion Square, Holborn, at 7 p.m.

Central V.A. of Ireland.
Pres. Mr. W. A. Byrne, M.R.C.V.S., Roscommon
Hon. Sec: Mr. J. J. Vahey, M.R.C.V.S., Ballinrobe
Treas: Mr. J. F. Healey, M.R.C.V.S., Midleton

Eastern Counties V.M.A.
Pres: Mr. John Pollock, F.R.C.V.S., Chapel Field-rd, Norwich
Hon. Sec.: Mr. H. P. Standley, M.R.C.V.S. Wymondham
Meetings, Second Tuesday, Feb. and July

Glasgow V.M.S.
Pres. Principal McCall.
Hon. Sec. Mr. John P. Small.

Vet. Med. Assn. of Ireland.
Pres: Mr. M. Hedley, F.R.C.V.S.
Privy Council Office, Dublin Castle
Hon. Sec. Mr. J. McKenny, M.R.C.V.S.
116 Stephens-green-west, Dublin

Lancashire V.M.A.
Pres: Mr. Jos. Abson, F.R.C.V.S., Norfolk-st, Sheffield
Hon. Sec: Mr. Harry Locke, M.R.C.V.S.
Grosvenor Street, Oxford Street., Manchester
Meetings, 1st Thursday in April, June, Sept., & Dec.

Lincolnshire V.M.S.
Pres. Mr. R. W. Clarke, M.R.C.V.S., Wragby
Hon. Sec: Mr. T. Turner, M.R.C.V.S., Sleaford
Treas: Mr. E. C. Russell, M.R.C.V.S., Grantham
Meetings, Second Thursday, Feb., June and October

Midland Counties V.M.A.
Pres: Mr. John Blakeway, F.R.C.V.S., Birmingham
Hon. Sec: Mr. H. J. Dawes, F.R.C.V.S.,
Camden House, High St., West Bromwich
Meetings, Second Tuesday, Wednesday, Thursday, and Friday alternately in Feb., May, Aug. and Nov.

National Vet. Association.
Pres: Prof. J. F. M'Fadyean, M.R.C.V.S., R.V. Coll. London
Sec: Mr. William Hunting, F.R.C.V.S.
Treas: Mr. F. W. Wragg, F.R.C.V.S., Whitechapel, London.

National Veterinary Benevolent & Mutual Defence Society.
Pres: Mr. Geo. Morgan, F.R.C.V.S., 95 Stanhope-st. Liverpool
Treas: Mr. E. Faulkner, F.R.C.V.S., Manchester
Hon. Sec: Mr. Sam. Locke, M.R.C.V.S.
Grosvenor Street, Oxford-st., Manchester

New South Wales V.M.A.
Pres: Mr. John Stewart, H. and A.S.
Vice: Mr. John Pottie, H. and A.S.
Hon. Sec. & Treas: Mr. J. D. Stewart, M.R.C.V.S.

North of England V.M.A.
Pres: Mr. G. R. Dudgeon, M.R.C.V.S., Sunderland
Hon. Sec: Mr. E. R. Gibson, M.R.C.V.S.
25 Marlborough-street, Seaham Harbour
Meetings, Third Friday, Feb., May, Aug. and Nov.

North of Scotland V.M.S.
Pres: Mr. J. McLauchlan Young, F.R.C.V.S., Univ. Aberdeen
Sec. & Treas: Mr. Clement Baxter, M.R.C.V.S., Elgin

North Wales V.M.A.
Pres: W. Wynne Williams, M.R.C.V.S., Dolgelly
Hon. Sec. O. Trevor Williams, M.R.C.V.S., Llangefni
Meetings, First Tuesday, March and September

Ontario V.A.
Pres: Mr. G. L. Robson.
Sec: C. H. Sweetapple, Toronto.

Royal Counties V.M.A.
Pres: Mr. J. Sutcliffe Hurndall, M.R.C.V.S.,
Sussex Villas, Kensington
Hon. Sec: Mr. Percy J. Simpson, M.R.C.V.S., Maidenhead
Meetings, Last Friday, Feb., June and Nov.

Royal Scottish V.S.
Pres: Mr. Reid, M.R.C.V.S., Auchtermuchty.
Hon. Sec: Mr. W. D. Fairbairn, M.R.C.V.S., Cupar, Fifeshire

Royal Veterinary College M.A.
Pres: Prof. Woodruff
Hon. Sec: Mr. W. H. Chase, M.R.C.V.S.
Assist. H.S. Mr. Guy Sutton

Scottish Metropolitan V.M.S.
Pres: Mr. John Storie, M.R.C.V.S., East Linton
Hon. Sec: Mr. John Aitken, Junr., M.R.C.V.S., Dalkeith

South Durham and North Yorkshire V.M.A.
Pres.: Mr. W. N. Dobbing, M.R.C.V.S., Darlington
Hon. Sec: Mr. W. Awde, F.R.C.V.S., Stockton-on-Tees.
Meetings, First Friday, Mar., June, Sept. and Dec.

Southern Counties V.M.S.
Pres: Mr. C. F. Hulford, M.R.C.V.S, Haslemere, Surrey
Hon. Sec: Mr. C. Pack, M.R.C.V.S., Lymington, Hants
Meetings, Last Thursday, Mar., June and Sept.

South Wales and Monmouthshire V.M.A.
Pres: Mr. E. Sayer, M.R.C.V.S., Newport, Mon.
Hon Sec. Mr. D. G. Davies, M.R.C.V.S., High-st, Swansea
Treas. Mr. E. Sayer, M.R.C.V.S., Newport, Mon.
Meetings First Thursday in March, and Autumn.

Western Counties V.M.A.
Pres: R. E. L. Penhale, M.R.C.V.S., Torrington
Hon. Sec: Mr. W. Ascott, M.R.C.V.S., Bideford
Treas: Mr. P. G. Bond, M.R.C.V.S., Plymouth
Meetings, Third Thursday, March, July and November

West of Scotland V.M.A.
Pres: Dr. James McIntosh McCall, Vety. Coll. Glasgow
Hon. Sec & Treas: Mr. J. Bishop, M.R.C.V.S.,
754 Garscube Road, Glasgow

Yorkshire V.M.A
Pres Mr. Frank Somers, M.R.C.V.S. Wade Lane, Leeds
Hon. Sec; Mr. A. McCarmick, M.R.C.V.S., Kirkstall-rd, Leeds
Meetings, Last Friday in Jan., April, and October.